

What is claimed is:

1. A mesoporous silica having uniform mesopores and a periodic structure, which contains a Zr element in the form of a Si-O-Zr bond and wherein the Zr content in the Si-O-Zr bond, represented by $[Zr/(Si + Zr)]$ is 0.05 to 20 mole %.
2. A mesoporous silica according to Claim 1, which has a particulate form or a filmy form.
3. A mesoporous silica according to Claim 1, wherein the diameters of the mesopores are 1.0 to 3.0 nm and the volume of the mesopores is 0.5 to 1.0 cc/g.
4. A mesoporous silica according to Claim 2, wherein the diameters of the mesopores are 1.0 to 3.0 nm and the volume of the mesopores is 0.5 to 1.0 cc/g.
5. A mesoporous silica according to Claim 1, which has an alkali resistance index of larger than 10 in terms of pH when an alkali resistance test is conducted and evaluation is made based on the peak intensity appearing at $2\theta = 2.5^\circ$ of X-ray diffraction.
6. A mesoporous silica according to Claim 2, which has an alkali resistance index of larger than 10 in terms of pH when an alkali resistance test is conducted and evaluation is made based on the peak intensity appearing at $2\theta = 2.5^\circ$ of X-ray diffraction.
7. A mesoporous silica according to Claim 3, which has an alkali resistance index of larger than 10 in terms of pH when an alkali resistance test is conducted and evaluation is made based on the peak intensity appearing at $2\theta = 2.5^\circ$ of X-ray diffraction.
8. A mesoporous silica composite material comprising a porous substrate and a mesoporous silica deposited thereon;

said mesoporous silica having uniform mesopores and a periodic structure, which contains a Zr element in the form of a Si-O-Zr bond and wherein the Zr content in the Si-O-Zr bond, represented by $[Zr/(Si + Zr)]$ is 0.05 to 20 mole %.

5 9. A mesoporous silica composite material according to Claim 8, wherein said mesoporous silica has a particulate form or a filmy form.

10 10. A mesoporous silica composite material according to Claim 8, wherein the diameters of the mesopores of said mesoporous silica are 1.0 to 3.0 nm and the volume of the mesopores of said mesoporous silica is 0.5 to 1.0 cc/g.

15 11. A mesoporous silica composite material according to Claim 8, wherein said mesoporous silica has an alkali resistance index of larger than 10 in terms of ph when an alkali resistance test is conducted and evaluation is made based on the peak intensity appearing at $2\theta = 2.5^\circ$ of x-ray diffraction.

20 12. A process for producing a mesoporous silica, which comprises mixing a solution containing a surfactant, with a solution or dispersion containing a Si source and a Zr source, stirring the resulting mixture to form a gel, placing the gel in a pressure vessel and keeping the gel at a predetermined temperature, then calcining the gel to form particles, and molding the particles into a desired shape.

25 13. A process for producing a mesoporous silica composite material, which comprises dipping a porous substrate in a solution or dispersion containing a Si source and a Zr source, adding the porous substrate and the solution or dispersion containing a Si source and a Zr source, into a solution
30 containing a surfactant, stirring the resulting mixture to

form a gel, placing the gel and the porous substrate in a pressure vessel and keeping them at a predetermined temperature, then calcining them.